

ends of the nearly naked branches of the panicle, more conspicuous in the male plants from the shorter crowded erect stamens: filaments white, broader than the oval blunt (or rarely short mucronate) anthers and involute when dry, appearing then clavate and rugose: achenia mostly narrower and more stipitate.—New Brunswick to Florida and Louisiana; west to Ohio, but mostly confined to the Atlantic States.

Glabrous or pubescent, but not glandular. When conspicuously downy it is *T. pubescens* Nutt. The achenia are rarely pubescent.

So far as I have been able to observe, glandular and non-glandular trichomes never occur on the same plant, nor have I seen any glandular specimens with the characteristic stamens of *T. polygamum*, so that the presence of glands appears to be characteristic of *T. purpurascens*, so far as these two species are concerned. Where no stamens occur it is impossible to identify fertile plants with certainty unless this character can be utilized, and it must then be used only as a positive character, since glabrous or pubescent forms occur in both species. In *T. purpurascens* a variety can not conveniently be based on it, for several other species of the genus (e. g. *T. sparsiflorum*) include both glabrous and glandular forms, not separable by associated characters. No good reason exists for separating *T. purpurascens* into two species (*revolutum* and *dasycarpum*) as has been done by Lecoyer;\* nor, in the opinion of Dr. Gray, is there sufficient doubt as to the plant intended by Linnæus to warrant the rejection of his name in this instance, though this is necessary in the case of *T. polygamum*.

Specimens occur both in the north and south which resemble *T. dioicum* in having very thin glabrous (rarely sparingly pubescent) pale leaflets rounded and with 7 to 9 round lobes at the apex, but with the fruit, as in these species, i. e., thin-walled, stipitate, 2-edged and wing-nerved (not subsessile, thick-walled, terete and deeply and evenly grooved). It is doubtful whether these forms should not be regarded as hybrids, and cases of the simultaneous flowering of *T. dioicum* and either of the late species should be noted.—WM. TRELEASE.

**The Brothers Tulasne.**—It is but a few months since the botanical journals announced the death of Charles Tulasne at Hyeres in the south of France, on August 21, 1884, and we are now called to mourn the death of his elder brother, Louis René Tulasne, who died at Hyeres on December 22, 1885. In their lives and botanical work the two brothers were so intimately associated that botanists have almost come to use the name Tulasne as representing a single person. They were so modest and reticent with regard to themselves that few details of their lives could be learned even by their associates. The older brother, Louis René, was born at Azay-le-Rideau, Indre-et-Loire, September 12, 1815, and studied law at Paris. His first botanical work was in connection with Auguste St. Hilaire in the preparation of his flora of Brazil. In 1842 he was appointed aide-naturaliste at the museum of the Jardin des Plantes, and, in 1854, he was elected to the Academy as the successor of Adrien de Jussieu. About 1864 his health failed and he was obliged to retire from active service at the museum. His brother Charles was born at Langeais, Indre-et-Loire,

\* Monogr. du genre *Thalictrum*, Gand. 1885.



September 5, 1816, and began the practice of medicine in Paris in 1843. Soon after the withdrawal of Louis from active life the two brothers removed to Hyeres on the Mediterranean, where they passed the remainder of their lives in seclusion, absorbed in the service of the Roman Catholic Church of which they had always been most devout followers.

From a letter written by Dr. Vidal to the President of the Academy at Paris, we learn that, on December 22, M. L. R. Tulasne, who appeared to be in good health, accompanied a friend for a part of the way from his own residence to Hyeres, but on his return he was suddenly seized with an apoplectic fit and remained unconscious until his death at 4 P. M. The following extract from Dr. Vidal's letter expresses the esteem in which M. Tulasne was held by his neighbors: "You will have at Paris all the information regarding his scientific work; but what will never be known is the amount of good which he did to those about him. M. Tulasne lived very retired in the country; he received all persons with the same affability, but one saw that, to interest him actively, it was necessary to point out to him those who were unfortunate and in need of consolation, and then his goodness and charity were equally inexhaustible. Aided by his brother, Dr. Tulasne, who died last year, he established charitable institutions pretty nearly everywhere in this region. His life so well spent may be summed up by saying that he did good, nothing but good and always good."

In their botanical works the illustrations were generally made by Charles, while the text was written by Louis, although, in a number of cases, the text was the joint work of both. Of the fifty titles given under their names in the Royal Society's Catalogue, eleven bear the names of both brothers. Their active work began with "Observations sur le genre *Elaphomyces*," in the *Annales des Sciences* of 1841, and their latest work was probably the paper on *Tremellini* in the *Annales* of 1872. Of their contributions to phænogamic botany the most important were monographs of the *Podostemaceæ* and *Monimiaceæ* in the *Archives du Museum*, some articles on *Leguminosæ*, and an account of Madagascar plants, all showing careful and accurate work in descriptive botany, while the "Etude d'embryologie végétale," in the *Annales* of 1847, showed their ability in a very different and difficult field.

But it is in connection with their work on the structure and development of fungi that they are best known and, in this department of botany, their writings, we might almost say, form the basis of modern views on the subject. As in most all cases Charles furnished the illustrations and, at times, also a portion of the text, we need not distinguish between the two brothers in speaking of their mycological works. Their attention was, at first, directed to hypogæous fungi, and from them it naturally turned to the structure of *Gasteromycetes*, an order which was in a chaotic condition at that time. The structure and affinities of the principal genera of this order formed the subject of several of their papers. The *Ustilagineæ* and *Uredineæ* were treated in two important papers, "Mémoire sur les Ustilaginées comparées aux Urédinées," in the *Annales* of 1847, and "Second Mémoire sur les Urédinées et les Ustilaginées," in 1854. In these two admirable papers, to a knowledge of the anatomy there was added a study of the germination and development of the spores in the different genera



with the result of showing clearly the relations of the uredo- and teleutosporic forms, and affording a proper basis of classification of the two orders.

The metamorphoses of *Pyrenomycetes* gave rise to a number of papers in which the connection of secondary forms as conidia, pycnidia, spermogonia, with ascosporic forms was clearly shown. On this fruitful topic, the superb illustrations have been the envy of all later botanists, and their observations on the development of ascomycetous fungi threw a flood of light on one of the most obscure corners of mycology. In this connection should be mentioned the memoir on ergot and also the "Mémoire pour servir à l'histoire organographique et physiologique des lichens" in the *Annales* of 1852, one of the most important treatises on the structure of lichens.

The complete studies of the Tulasnes on hypogæous forms appeared in 1851, when they published a folio volume, "*Fungi Hypogæi*," of which only a hundred copies were printed. This work was followed in 1861-65 by the "*Selecta Fungorum Carpologia*" in three volumes, containing an elaborate account of the different conditions of *Erysiphei*, *Pyrenomycetes*, and all other ascomycetous fungi. These four volumes, which really form a single series, are most elaborately and luxuriously printed and illustrated, and are certainly unequalled, artistically considered, by any other work on fungi. They will remain a lasting monument to the memory of these two men, who were as talented as they were modest. Always courteous to their contemporaries and quick to recognize the value of their work and that of their predecessors, it is not strange that they were universally esteemed. Their lives seem almost a romance from the time when they began their botanical career as young men at Paris to their death at one of the most beautiful spots on the Mediterranean. The spirit which guided them through life and inspired them in their scientific work is indicated in the quotation which is placed at the head of the beautiful plates of the last volume of the *Carpologia*: "Non nobis, Domine, non nobis sed Nomini Tuo da gloriam."—W. G. FARLOW.

**The Grasses of Coulter's Manual.**—In his preface the author invites criticisms or corrections with the view of hastening the production of a second edition, and the remarks here offered are made with the hope that they may be of some use in the direction indicated. Being more intimately acquainted with the order Gramineæ than with the other families, these notes will be confined to this order.

The sequence of the genera of grasses is in accordance with that of Bentham and Hooker's *Genera Plantarum*, and we have here the first attempt at introducing into an American text-book that nomenclature of the parts connected with the flowers, as adopted by Bentham, designed to express their true morphological relations. The term glume is applied not only to the two lower bracts that embrace or subtend the spikelets, but also to the bract that subtends the flower which, in other American text-books, is termed the lower palet or palea. The latter term (palea) is applied only to the "upper palea" of authors, the real character of which has never been clearly demonstrated. Bentham suggested that this palea with the lodicules might represent perianth segments of an outer and inner series which, if confirmed, would justify our designating as a neutral flower that in which the palea alone or the palea and lodicules without stamens or pistils are developed; but we must not include in the flower the bract or glume which subtends it.<sup>1</sup>

<sup>1</sup> Bentham, Notes on Gramineæ, Trans. Linn. Soc. XIX., p. 24.